

IN THE CLAIMS:

Please replace all previously pending claims with the listing of claims set forth below:

Claims 1 to 9. (Cancelled)

10. (Currently Amended) An analyzing system for the detection of reducing and oxidizing gases in a carbon dioxide gas flow whose quality is to be evaluated, said carbon dioxide gas carrier gas having an oxygen content not exceeding 30 ppm of oxygen, which comprises:

a plurality of detecting means, wherein said detecting means are chemiresistor gas sensors each of them comprising a semiconductor-type metal-oxide active layer, metallic electrodes to monitor the changes in the electrical conductivity of the semiconductor layer and heating means,

calibrating means,

a sealed measuring chamber into which said plurality of gas sensors are located,

means for connecting said carrier carbon dioxide gas flow to said measuring chamber so that a carbon dioxide gas flow is supplied through said chamber, the measurements being performed inside said chamber while said sensors are exposed to said carbon dioxide gas flow, and

wherein the sensing mechanism of the system involves the monitoring of conductivity changes of each sensor which take place in response to the presence of said pollutant gases contained in the carbon dioxide gas flow, and take place without the need to introduce additional oxygen into the sensor's structures during measurement,

wherein the system further comprises calibrating means including pure carbon dioxide gas and contaminated carbon dioxide gas, and

means for processing and control of acquisition and data recognition including

~~wherein said gas detection means are sensors based on semiconductor type metal oxides, which are located into said measuring chamber,~~

~~wherein the measurements on said carrier gas are taken inside said chamber without the need to introduce additional oxygen into the sensors' structures, when said sensors are exposed to a carrier gas flow of constant value; and~~

~~wherein said means of processing and control include a system of real-time recognition of said pollutant gases, which provides a diagram with delimited decision zones for pure carbon dioxide gas and contaminated carbon dioxide gas, in which the measurements taken on said carrier the carbon dioxide gas are situated and identified.~~

11. (Currently Amended) An analyzing system according to Claim 10, wherein said calibration means include a plurality of patterns or calibrated gases at least equal in number to the number of reducing and oxidizing gases that have to be detected in the carrier gas carbon dioxide gas flow, wherein the response of the plurality of sensors to the measurements of patterns includes the obtaining of a vector of conductance variation for each calibrated gas or standard.

12. (Previously Presented) An analyzing system according to Claim 11, wherein said recognition means comprises obtaining a learning matrix resulting from grouping the conductance variation vectors of the measurements taken with the plurality of patterns or calibrated gases.

13. (Currently Amended) An analyzing system according to Claim 12, wherein said recognition means identifies the measurements taken in the carrier gas carbon dioxide gas flow, according to the algorithm:

- obtaining a vector of conductance variation for the plurality of sensors;

- auto scaling of the vector with mean values and variances used to auto scale a learning matrix obtained from the patterns or calibrated gases;
- projecting the auto scaled vector onto a space of the principal components extracted on the basis of the learning matrix obtained with the calibration means; and
- identifying a type of response, dependent upon the position occupied by the vector.

14. (Currently Amended) An analyzing system according to Claim 13, wherein the type of response identified by the recognition means includes the responses of pure ~~carrier-gas~~ carbon dioxide, contaminated ~~carrier-gas~~ carbon dioxide at alert level due to at least one contaminant and contaminated ~~carrier-gas~~ carbon dioxide at alarm level due to at least one contaminant.

15. (Previously Presented) An analyzing system according to Claim 10, wherein said processing and control means include a microprocessor that corrects temporary deviations of the sensor responses and controls and processes the data that permit detection of the presence of reducing and/or oxidizing gases at various pre-established levels.

16. (Currently Amended) [A] An analyzing system according to Claim 10, wherein said connecting means comprise a plurality of electrically operated valves and connecting pipes to permit the ~~carrier-carbon dioxide~~ gas or calibrated gases to flow through the chamber that contains the sensors.

17. (Cancelled)

18. (Currently Amended) An analyzing system according to Claim 10, wherein utilization of the gas sensor based on semiconductor-type metal oxides is proposed for detecting reducing and oxidizing gases present in a ~~carrier-gas-carbon dioxide gas flow~~ having an oxygen content not exceeding 30 ppm of oxygen.

19. (Currently Amended) A system for detecting reducing and oxidizing gases in a ~~carrier gas carbon dioxide gas flow whose quality is to be evaluated, said carbon dioxide gas~~ having an oxygen content not exceeding 30 ppm of oxygen, which system comprises:

a plurality of chemiresistor sensors, based upon semiconductor-type metal oxides, located in a sealed measuring chamber, which sensors work without the need to introduce additional oxygen into the sensors' structure each of which sensors comprises a semiconductor-type metal-oxide active layer, metallic electrodes to monitor the changes in the electrical conductivity of the semiconductor layer, and heating means,

a scaled measuring chamber into which said plurality of gas sensors are located,

calibration means comprising a plurality of patterns or calibrated gases at least equal in number to the number of reducing and oxidizing gases that have been detected in the ~~carrier gas carbon dioxide;~~ and

means for processing and control of acquisition and data recognition,

wherein the sensing mechanism of the system involves the monitoring of the conductivity changes of each sensor which take place in response to the presence of pollutant gases contained in said carbon dioxide gas flow, and which take place without the need to introduce additional oxygen into the sensor's structures during measurement, said system implements calibrations in an automated way that is transparent to a user/operator of said system,

wherein said means of processing and control include a system of real-time recognition of said gases, which provides a diagram with delimited decision zones, in which the measurements taken on said ~~carrier gas carbon dioxide gas~~ are situated and identified, wherein the response of the plurality of sensors to the measurements of patterns includes obtaining a vector of conductance variation for each calibrated gas or standard, and wherein said recognition system comprises obtaining a learning matrix

resulting from grouping the conductance variation vectors of the measurements taken with the plurality of patterns or calibrated gases.

20. (Currently Amended) An analyzing system according to Claim 19, wherein said recognition system identifies the measurements taken in the ~~earrier~~ carbon dioxide gas, according to the algorithm:

- obtaining a vector of conductance variation for the plurality of sensors;
- auto scaling of the vector with mean values and variances used to auto scale a learning matrix obtained from the patterns or calibrated gases;
- projecting the auto scaled vector onto a space of the principal components extracted on the basis of the learning matrix obtained with the calibration means; and
- identifying a type of response, dependent upon the position occupied by the vector.

21. (Currently Amended) An analyzing system according to Claim 20, wherein the type of response identified by the system includes the responses of pure ~~earrier~~ carbon dioxide gas, contaminated ~~earrier~~ carbon dioxide gas at alert level due to at least one contaminant and contaminated ~~earrier~~ carbon dioxide gas at alarm level due to at least one contaminant.

22. (Previously Presented) An analyzing system according to Claim 19, wherein said processing and control means include a microprocessor that corrects temporary deviations of the sensor responses and controls and processes the data that permit detection of the presence of reducing and/or oxidizing gases at various pre-established levels.

23. (New) An analyzing system according to Claim 10, for the detection of reducing and oxidizing gases (pollutant gases) selected from the group consisting of propane, butane, hexane, methane, ethylene and sulfur dioxide.